



## PREVALENCE OF BONE TUMORS IN A TERTIARY CARE HOSPITAL : A FIVE YEAR RETROSPECTIVE STUDY .

### Pathology

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### ABSTRACT

**Introduction:** Primary bone tumors are very rare lesions and account for less than 1% of all cancers worldwide, while bone sarcomas account for 0.2% of all malignancies. Bone tumors often have similar presentation and clinical approach but they present individual characteristics that are important for treatment and prognosis.

**Objectives:** To describe the characteristics of primary malignant bone tumors in a tertiary center.

**Methods and materials:** A retrospective analysis of all malignant bone tumors histologically confirmed bone tumors registered in histopathology section of Pathology Department in Government Medical College Jammu over a period of 5 years from 2015 to 2019.

**Results:** A total of 110 cases of primary bone tumors were studied, out of which there were seventy six cases of primary malignant bone tumors and thirty four were benign tumors aged 8 to 78 years, mean age was 25.6 years. Among these seventy patients were males and forty were females with a ratio of 1.75.

**Conclusion:** The study showed that primary bone tumors occurred mainly in second decade of life with male predominance Osteochondroma and osteosarcoma is the most common benign and primary malignant bone tumors respectively. The most common site of bone tumors was upper end of femur including hip joint followed by spine.

### KEYWORDS

Bone tumors, osteosarcoma, osteochondroma, sarcoma, prevalence.

### INTRODUCTION

Among the wide array of human neoplasms, Primary bone tumors are relatively uncommon contributing only 0.5% of total world cancer incidence (1). Overall bone sarcomas account just for 0.2% of all malignancies and also 5 year survival rate is 67.9% (2). Also the clinical presentation of these patients is quite non specific (3). Majority of patients report pain and swelling (4).

The non specific presentation poses a diagnostic problem. The challenge is heightened in developing countries due to limited diagnostic and therapeutic facilities as well as ignorance. As already mentioned bone cancers are not very common and perhaps for this reason its etiology is not very clear. Malignant bone tumors are histologically heterogeneous with more than 20 different subtypes but the majority of those diagnosed in children and adolescents are osteosarcomas (52%) and Ewing's sarcoma (34%) (5).

There are worldwide variations in patterns of cancer (6). Age of the patient, site affected, radiographic and microscopic appearances contribute in making the final diagnosis, hence a multidisciplinary approach is required. Early diagnosis and identification of benign lesions help in performing limb salvaging surgeries (7).

The individual biological characteristics of each tumor type are important for treatment and prognosis. The management of a child or adolescent with bone sarcoma is best carried out by a multidisciplinary team in a specialized center. Surgical management is highly specialized and the decision regarding the best approach depends upon the type / nature of tumor, its extension, the response to chemotherapy and the expertise available (8).

In the present study it is sought to determine the spectrum and demographic characteristics of bone tumors and tumor like lesions in this part of country.

### MATERIALS AND METHODS

A retrospective review of the clinical and histopathological records of patients with establishing diagnostic of bone tumors at government medical College Jammu was done covering the period between January 2016 and December 2019. The clinical data such as the age, sex, anatomical size, radiological and histopathological findings as well as the records of other investigations and management were extracted from the clinical care notes of the patients where ever necessary when histopathological workup was required, new sections were prepared from the paraffin blocks and stained with routine Haematoxylin and Eosin stain. Odontogenic tumors were excluded from the study. All non neoplastic lesions and metastatic tumors were excluded from the study.

The classification was based on the current WHO histological classification of bone tumors. The data was manually analyzed using frequency, distribution and percentages.

### RESULTS

| Primary malignant bone tumors | No. of cases | Percentage of total no. of cases (benign and malignant) |
|-------------------------------|--------------|---------------------------------------------------------|
| Osteosarcoma                  | 42           | 38%                                                     |
| Ewing's sarcoma               | 26           | 24%                                                     |
| Chondrosarcoma                | 8            | 7%                                                      |

### Anatomical Distribution of the Malignant tumors

| Site    | Frequency |
|---------|-----------|
| Femur   | 48        |
| Tibia   | 28        |
| Humerus | 16        |
| Pelvis  | 8         |

| Primary benign bone tumors | No. of cases | Percentage of total no. of cases. |
|----------------------------|--------------|-----------------------------------|
| Enchondroma                | 4            | 3.5%                              |
| Osteochondroma             | 14           | 13.5%                             |
| Giant cell tumor           | 3            | 2.5%                              |
| osteoblastoma              | 2            | 1.5%                              |
| chondroblastoma            | 2            | 1.5%                              |
| Fibrous Dysplasia          | 6            | 5%                                |
| Osteoid Osteoma            | 3            | 2.5%                              |

A total of 110 cases of primary bone tumors were studied out of which 76 cases of primary malignant tumors were recorded over a period of four years. The types, age, sex distribution and sites of bone tumors encountered with their relative frequencies (table 1, 2 and 3).

Out of 110 patients studied (aged 8 to 78 yrs.) mean age was 25.6 years. among these patients males were 66 and females were 44.

On histological examination 34 were benign and 76 were recorded as primary malignant tumors.

### DISCUSSION

Among benign cases Osteochondroma were the commonest benign tumors accounting for 14 cases (13.5%) followed by fibrous dysplasia 6 cases (5%).

Among 76 cases recorded as primary malignant tumors, osteosarcomas were the commonest malignant tumors accounting for 42 cases (38%) followed by Ewing's sarcoma 26 cases (24%). Overall 3 common tumors, osteosarcoma made up to 76 cases (69%) of all cases. The rest 34 cases were benign, less common tumors i.e.

Osteochondroma (14), fibrous dysplasia (6), enchondroma (4), 3 cases each of giant cell tumor and osteoid osteoma and 2 cases each of osteoblastoma and chondroblastoma.

Osteosarcoma is the most common primary bone tumor in young and adolescent s. occurs most frequently in second decade of life, occurs in metaphysis mostly in lower end of femur followed by upper end of tibia. in this study there were 42 cases seen in second and third decade of life making it the peak age group for the tumor.

Ewing's sarcoma is the highly malignant, undifferentiated, peripheral primitive neuroectodermal tumor occurring most commonly in diaphysis of long bones. majority of cases were in the second decade. No cases were seen in the age group greater than 50 years.

There were eight cases of chondrosarcoma with middle age range and a mean of 37.5 years. peak incidence for osteochondroma in the study conducted by Oyemad et al was third and fourth decade (11).

Our study showed male predominance with the ratio of 1.75 similar to the findings in other studies (4,10).

However for individual tumors no gender bias was noted in our study. The findings have been. The findings have been variable in other studies in this aspect. One of the studies reported male predominance while another showed no sex difference (11,13). the lack of gender bias in this study is probably due to small number of cases for each tumor type.

The most common sites of primary bone tumors in this study were femur followed by tibia and humerus. These findings are concordant with other studies (4,14,15).

The most common tumor in our study was osteosarcoma (38%) and findings concordant with a large study conducted in China with a sample size of 9200 patients (6) also with a study conducted by Verma Rahul et al (16).

In our study second most common tumor was Ewing's Sarcoma accounting for 24% cases. This finding showed concordance with other studies. Petra et al also reported Ewing's sarcoma as the second most common malignant primary bone tumor (15). It can be considered as a geographical variation.

Overall this study showed a higher prevalence of malignant primary bone tumors than benign tumors and a greater number of cases of Ewing's Sarcoma when compared to other studies.

The most common clinical presentation of these tumors was swelling. 555 of patients presented only with swelling and 425 presented with both swelling and pain. Other patients presented with symptoms like delimitation of movement and pathological fractures.

Our study describes the pattern and frequencies of primary bone tumors clinically evaluated at our institute over four year period. The pattern and distribution of bone tumors seen at our center are similar to those reported from other studies. Males were more commonly affected by bone tumors than females with a peak in the second decade of life. Long bones of lower extremity were the most commonly affected sites.

Osteosarcomas were the most commonly affected tumors.

Since bone tumors present with non specific symptoms of pain and swelling to achieve a high rate of accurate diagnosis of bone tumors, joint clinical, radiological and pathological team work is required. a high index of suspicion is recommended especially in patients in their first two decades of life.

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